

RESTRICTED - NOT FOR PUBLICATION

FEDERAL COMMUNICATIONS COMMISSION

WAR TIME OPERATION OF RADIO STATIONS IN THE CONTINENTAL UNITED STATES

September 1, 1942



RESTRICTED ORDER No. 2

FEDERAL COMMUNICATIONS COMMISSION

Washington, D. C.

RESTRICTED ORDER No. 2

IT APPEARING that under the existing state of war, public interest, convenience and necessity require, from time to time, cessation of operation or emergency operation of radio stations, as may be determined by certain officers of the Armed Forces, and that for these purposes the Commission has heretofore adopted Order No. 88, Order No. 88-A, and Restricted Order No. 1; and

IT FURTHER APPEARING that a revision and consolidation of the aforementioned Orders is necessary;

IT IS ORDERED, this 1st day of September, 1942, that the instructions contained in the attached "War Time Operation of Radio Stations in the Continental United States" be adhered to by all radio station licensees, superseding instructions heretofore issued through Order No. 88, Order No. 88-A, and Restricted Order No. 1.

BY ORDER OF THE FEDERAL COMMUNICATIONS
COMMISSION

T. J. Slowie,
Secretary.

Approved:

BOARD OF WAR COMMUNICATIONS,

James Lawrence Fly,
Chairman.

(I)

**WAR TIME OPERATION
OF
RADIO STATIONS
IN THE
CONTINENTAL UNITED STATES**

September 1, 1942

(II)

FEDERAL COMMUNICATIONS COMMISSION

Washington, D. C.

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PART I

RESPONSIBILITY FOR CONTROL OF RADIO

A. The War Department has charged the Commanding Generals, Eastern, Western, Southern and Central Defense Commands (which together comprise all the Defense Commands in the continental United States), with the planning and execution of all defense measures for their respective commands, including measures relating to air defense.

B. Responsibility for measures relating to the control of radio stations within their respective commands has been delegated by Defense Commanders, as follows:

- (1) *Eastern Defense Command* has designated the First Fighter Command* as Controlling Authority.
- (2) *Western Defense Command* has designated the Fourth Fighter Command* as Controlling Authority.
- (3) *Southern Defense Command* has designated the Third Fighter Command* as Controlling Authority.
- (4) *Central Defense Command* has designated the Region Controller, Central Air Defense Region (Commanding General, Sault Ste. Marie Military District) as Controlling Authority.

C. Radio Stations affected by this Order are to comply immediately with all instructions received from the Controlling Authority** of the Army. Cessation of emissions, resumption of normal operation or other action may be directed by such authority.

*Formerly called Interceptor Command.

**The term "Controlling Authority," as herein used, refers to the designated authorities named in paragraph B (1), (2), (3) and (4).

PART II

ORGANIZATION FOR CONTROL OF RADIO

A. Army Information Centers are located at strategic points within each Defense Command. Officers are on duty at all times in these Information Centers who are responsible to the Controlling Authority of the Army for issuing appropriate instructions to any or all radio stations in the air defense region in which a particular Information Center is located. Radio Stations in adjoining regions in the same or in separate Defense Commands are controlled by telephonic coordination between the appropriate Controlling Authorities. Instructions from the Controlling Authority will be issued through representatives of the Federal Communications Commission on duty in the Information Centers. Such instructions shall be complied with immediately.

B. Instructions originating with the Controlling Authority will, in general, specify action to be taken and the class of station, geographical area, and frequency bands affected. At the present time, it is believed that frequencies between 3000 and 30000 kcs are not of value to aircraft navigating by radio direction finding. Final determination, however, as to which classes of radio stations are to be silenced in the event of a raid will rest with the Controlling Authorities.

PART III

METHODS OF CONTROL OF RADIO

A. When the Controlling Authority desires radio stations to take certain action (cease emissions, resume operation or other action), instructions will be issued by the Controlling Authority.* Since the problem of disseminating such instructions to radio stations varies in different regions, the Controlling Authority may adopt such of the methods as are hereinafter set forth. Regardless of the method of control adopted, all radio stations subject to this Order are responsible for receipt of and compliance with instructions emanating from the Controlling Authority.

B. Actual operation tests may be conducted at the discretion of the Controlling Authority in cooperation with authorized representatives of the Federal Communications Commission and representatives of the stations concerned, to determine the most suitable method. After the Controlling Authority has established the method or methods of control, tests will be made at the direction of the Controlling Authority at frequent intervals to make certain of continuous satisfactory operation.

C. The basic methods hereinafter set forth shall be adhered to unless other instructions are issued by the Controlling Authority.

1. BROADCAST SERVICES

(a) Key Broadcast Station Method.

(1) The Key Broadcast Station Method involves the designation of radio control areas within which radio stations are grouped. Key Broadcast Stations are designated within radio

* Whenever the Controlling Authority issues instructions to cease emissions, the tower lights and all other exposed lights of the radio stations affected shall be extinguished for the duration of the radio silence, except where otherwise specifically directed by the Controlling Authority. All radio stations must provide means (either manual or automatic) approved by the Controlling Authority to extinguish such lights at any time.

control areas. Relay Key Stations are designated to control a portion of the area to assure the transmission of instructions from the Key Stations to other stations within the entire radio control area. Where necessary to assure active control when a particular Key or Relay Key Station, for any reason, is not able to operate, an Alternate thereto is designated. Key and Relay Key Stations and Alternates thereto are designated as such by the Controlling Authorities exclusively on the basis of actual operating needs. Such Stations are hereinafter referred to collectively as Selected Stations. Upon acceptance of responsibilities attendant to such designation, Selected Stations shall thenceforth operate in conformance to this Order.

(2) Selected Stations will receive instructions from the Controlling Authority to cease emissions, resume operation or take other action and disseminate such instructions to other radio stations in the region. When circumstances permit, Key and Alternate Key Stations are connected directly with the Information Center by a private telephone line. When circumstances (distance, etc.) do not permit installation of a private telephone line, each Key and Alternate Key Station must be equipped with toll terminals for quick connection with the Information Center. Relay Key Stations shall maintain a continuous listening watch on the Key Station to which they are assigned.*

(3) Each station, other than Selected Stations, operating under the Key Broadcast Station Method, shall be provided with at least one receiver which must be in operation and attended at all times when the station is in operation.* This receiver shall be installed at a convenient central point in the station and shall be kept tuned to the Key Station or Relay Key Station, whichever is in control of the area.

(4) When a Selected Station receives instructions, authenticated by a code word,** to take certain action in transmitting orders to other stations in the area, it shall, prior to transmission of such orders, emit for approximately thirty seconds a 1000-cycle tone, 100% modulated. Immediately following emission

*See Appendix 1, giving conditions and requirements under which Electronic Control may be substituted for or used as a supplement to continuous listening watch.

**A suitable secret code will be devised by each Controlling Authority for use within his region. This code will be changed from time to time and the affected stations so notified.

of the 1000-cycle tone, the Selected Station shall make a prescribed announcement authenticated by the same code word, apprising other stations in the area of the action they are to take, (cease emissions, resume operation or other action) and itself shall comply with instructions pertaining to Selected Stations. After complying with the instructions transmitted by Selected Stations, operators at other stations shall ascertain that their receivers are properly tuned for receipt of subsequent or additional instructions.

(5) Prior to resuming operation after temporary silence (scheduled or imposed), all stations shall ascertain that a condition of radio silence does not exist. Selected Stations shall obtain clearance by telephone from the Information Center before resuming transmission. Other stations shall tune through the broadcast spectrum to determine if Selected Stations in their area are in operation before resuming transmission.

(6) It shall be the responsibility of the Selected Station in control of the area to determine that all other stations assigned to it by the Controlling Authority have received and complied with transmitted instructions.* In the event of non-compliance with a particular instruction by any other station in the area, the Selected Station in control of the area shall immediately communicate by telephone with the offending station repeating the instruction and requesting compliance. A written report of any such occurrence shall be made by the Selected Station to the Controlling Authority.

(7) Key Stations and Relay Key Stations shall be in operation or ready for immediate operation at all times except when repair or maintenance necessitates a temporary shutdown. In such event, an Alternate Key or Alternate Relay Key Station will be directed by the Controlling Authority to assume control of the area for the required temporary period.

(b) Toll Terminal Method.

(1) The Toll Terminal Method involves the designation of radio control areas within which radio stations are grouped. Within each such area one station is designated by the Controlling Authority as the "Control Station," through which instructions received by telephone (to cease emissions, resume operation

*This may be accomplished by maintaining a listening watch or by a toll terminal connection.

or to take other action) from the Controlling Authority are relayed by telephone to other stations in the group. Control Stations are designated as such by the Controlling Authority exclusively on the basis of actual operating needs.

(2) Control Stations must be equipped with toll terminals (or private lines where feasible) for direct connection with the appropriate Information Center. Stations not designated as Control Stations must provide a toll terminal (or a direct private line where feasible) for connection with such Control Station as the Controlling Authority shall designate.

(3) Instructions to take certain action (to cease emissions, resume operation or other action) will be issued by the Controlling Authority to Control Stations within his region. These instructions will be accompanied by an authenticating code word.* Control Stations shall immediately relay these instructions, accompanied by the same code word, to other stations within the region.

(4) Prior to resuming operation after a period of silence (scheduled or imposed) all broadcast stations shall ascertain that a condition of radio silence does not exist. Control Stations shall obtain telephonic clearance to resume transmission from the appropriate Controlling Authority. Other stations shall provide a continuous 24-hour watch to insure receiving all telephone calls from the Control Station, or shall arrange with the telephone company for the addition of a lock-in relay to their toll terminal installation in order to indicate attempted calls made by the Control Station during the absence of the watch. Each morning prior to resuming operation, the condition of the relay shall be checked. In the event the relay indicates an attempted call while the station was unattended, telephonic clearance shall be obtained from the Control Station.

(5) Toll terminal facilities used in this plan shall be utilized exclusively for the purposes of this plan.

2. AVIATION SERVICES

Direct wire facilities will be provided between the Army Information Center and the Airways Traffic Control Center (or an

* A suitable secret authenticating code will be devised by each Controlling Authority for use within his region. This code will be changed from time to time and the affected stations so notified.

Airways Communications Station) of the Civil Aeronautics Administration within the region. The instructions of the Controlling Authority, when received by the Civil Aeronautics Administration, are passed to the stations concerned via C.A.A. teletype and interphone facilities. When a station in the aviation service receives instructions from the Controlling Authority via the Civil Aeronautics Administration to cease emissions, resume operation or take other action, such instructions shall be obeyed.

3. COASTAL TELEGRAPH SERVICES

The Controlling Authority in each region will designate coastal telegraph station(s) to act as Key Coastal Station(s). Direct wire or toll terminal facilities must be provided between the Information Center and Key Coastal Station(s). When the Controlling Authority desires coastal telegraph stations in the region to cease emissions, resume operation, or take other action, coded instructions will be issued to the Key Coastal Station(s). The Key Coastal Station(s) shall transmit these coded instructions on 500 kilocycles, and thereafter shall comply with the instructions. All coastal telegraph stations in the region, other than Key Coastal Station(s), must maintain a continuous listening watch on 500 kilocycles during their hours of operation, or, in lieu thereof, provide direct wire or toll terminal facilities to the Information Center or other point designated by the Controlling Authority. Prior to resuming operation after a period of silence (scheduled or imposed), all coastal telegraph stations shall ascertain that a condition of radio silence does not exist, either by observing that the Key Coastal Station is in operation or by telephoning directly to the Information Center or other point designated by the Controlling Authority. In lieu of the establishment of Key Coastal Stations, the Controlling Authority may require that coastal telegraph stations proceed under the provisions of paragraph (1) under the Toll Terminal Method described above.

4. COASTAL TELEPHONE AND COASTAL HARBOR SERVICES

All coastal telephone and all coastal harbor stations in each region must establish a Control Center having a direct wire circuit to the Information Center or other point designated by the Controlling Authority. The Control Center must relay instructions by wire to the stations under its control. During

all periods when such stations are in operation they (and Control Centers) must provide a continuous watch to insure receiving all telephone calls from the Information Center. Coded instructions of the Controlling Authority will be transmitted by telephone and must be strictly complied with. Prior to resuming operation after a period of silence (scheduled or imposed) each coastal telephone and coastal harbor station shall obtain telephonic clearance from the Information Center or other point designated by the Controlling Authority. In lieu of the use of direct wire facilities, the Controlling Authority may require that the licensees proceed as in Section 7 of this Part.

5. POLICE, SPECIAL EMERGENCY AND FORESTRY SERVICES

The licensees of police, special emergency and forestry radio stations shall comply with the provisions of Section 7 of this Part. Exceptions may be made only in those cases where the licensees in a region mutually agree to an effective alternate control plan. This plan must be approved by the Controlling Authority of the region at the Information Center in which they are located prior to any deviation from the procedure set forth in Section 7 of this Part.

6. FIXED PUBLIC POINT TO POINT AND AGRICULTURAL SERVICES

Arrangements shall be made for direct wire service or toll terminal facilities between the Information Center (or other point designated by the Controlling Authority) and stations of this class over which the instructions of the Controlling Authority will be transmitted. In lieu of the use of direct wire facilities, the Controlling Authority may require that the licensee proceed as provided in Section 7 of this Part.

7. SERVICES NOT SPECIFICALLY PROVIDED FOR ABOVE

All stations not specifically covered above must provide either for the reception of instructions by wire from a point having direct connection with an Information Center or maintain a listening watch as provided for under "Part III - Methods of Control of Radio - Broadcast Services." The means adopted shall be subject to approval by the Controlling Authority on the basis of actual operating tests. If either of the alternate procedures indicated above cannot be adopted, the operation of the station

shall be *discontinued immediately*, and the Federal Communications Commission in Washington notified in writing within twenty-four hours.

8. STATIONS OPERATING IN MORE THAN ONE SERVICE

Individual stations which operate in two or more classes of the services, heretofore mentioned, may adhere to the procedure prescribed for any one of such classes.

9. STATIONS OUTSIDE ACTIVATED REGIONS

The plans described herein provide primarily for the control of radio stations within activated regions of the Defense Command. Since some regions have not as yet been activated, there are many stations which are not immediately affected. Such stations, however, will comply with any instructions issued to them by the Controlling Authority of the Defense Command within which they are located.

PART IV

APPENDIX

1. USE OF ELECTRONIC CONTROL

When approved by the Controlling Authority, electronic control may be used as a substitute for or to supplement the continuous listening watch. *Sub-audible electronic control* may be used for either of these purposes. *Audible electronic control* may be used *only* to supplement the continuous listening watch. As a basis for approval of either System, the following requirements must be met and continuous dependability must be demonstrated by operating tests.

(a) *Sub-Audible System.*

(1) Each station shall provide a receiver which will operate an audible alarm when actuated by means of an appropriate sub-audible signal from the Key Station.

(2) The sensitivity of the receiver selected to receive the sub-audible signals shall be such as to actuate the audible alarm on a signal field intensity from the Key Station of 50 or more microvolts per meter with modulation of 5%. This receiver shall have at least one stage of tuned RF ahead of the first detector.

(3) The receiver shall be provided with a lock-in relay actuated by the sub-audible signal transmitted by the Key Station. The lock-in relay in turn will actuate the audible alarm which will continue to sound until silenced by the operator. The means of silencing the alarm shall be one which simultaneously resets the relay to monitoring position.

(4) The lock-in relay shall be reed-tuned or shall be actuated by a reed-tuned relay. The sharpness of tuning shall be sufficiently high to preclude interference from other services which may be assigned to adjacent sub-audible channels. Adjacent channels may be of the order of two cycles.

(5) A limiter circuit shall be included in the sub-audible alarm receiver to prevent the tripping of the alarm or

blocking the operation of the receiver by high amplitude noise or interfering signals. The limiter output is set at the sub-audible frequency voltage required for positive reed-relay action.

(6) The receiver should include a time delay circuit which, together with the time delay factor inherent in the reed, will be sufficient to prevent operation of the alarm until the sub-audible transmission has been maintained for 10 seconds.*

(7) The sub-audible alarm receiver shall be wired in a manner to receive and reproduce instructions from the Key Station by means of loudspeaker or headphones.

(8) Automatic volume control is required.

(9) The receiver shall be designed so as to provide a supplementary visual or audible indication when the Key Station goes off the air due to technical difficulties or the receiver fails to function normally for any reason, including power supply failure.

(10) The sub-audible alarm receiver shall be checked frequently for proper operation. A record of this check shall be entered in the station log with other entries required by the F.C.C. regulations.

(b) *Audible System.*

(1) Each station shall provide a receiver which will operate an audible alarm when actuated by means of a 1000-cycle signal from the Key Station.

(2) The sensitivity of the receiver selected to receive the 1000-cycle signals shall be such as to actuate the audible alarm on a signal field intensity from the Key Station of 50 or more microvolts per meter with modulation of 5%. This receiver should have at least one stage of tuned RF ahead of the first detector.

(3) A limiter circuit shall be included in the 1000-cycle alarm receiver to prevent the tripping of the alarm or blocking the operation of the receiver by high amplitude noise or interfering signals. The limiter output is set at the 1000-cycle signal voltage required for positive action.

* In the event reliable operation is not obtained by the transmission of a single pulse of 10 seconds or longer, circuits shall be installed which will respond only to an appropriately coded signal.

(4) The receiver shall include a time delay circuit and 1000-cycle filter circuit of such design as to prevent operation of the alarm except by the 1000-cycle signal maintained for 15 seconds.

(5) The 1000-cycle alarm receiver shall be wired in a manner to receive and reproduce instructions from the Key Station by means of loudspeaker or headphones.

(6) Automatic volume control is required.

(7) The receiver shall be designed so as to provide a supplementary visual or audible indication when the Key Station goes off the air due to technical difficulties or the receiver fails to function normally for any reason, including power supply failure.

(8) The audible alarm receiver shall be checked frequently for proper operation. A record of this check shall be entered in the station log with other entries required by the F.C.C. regulations.

(c) Other Electronic Devices.

The above instructions shall not preclude the use of other electronic devices. However, such other devices shall only be authorized after actual service tests have indicated satisfactory reliability and the operation has been accepted by the Controlling Authority and the Federal Communications Commission.

2. ARMY INFORMATION CENTERS

(a) The map appended shows the continental United States divided into four Defense Commands - *Eastern, Western, Southern, and Central*. It also shows the boundaries of the air defense regions activated within the various Fighter Commands as of August 25, 1942, and the location of Information Centers within such regions. It should be noted that the northeastern portion of the state of West Virginia (that portion east of 79°29' W. Long.), which is within the Central Defense Command, is included in the Philadelphia Air Defense Region and is responsible to the First Fighter Command for purposes of this Order.

(b) Each radio station licensee having one or more stations located within an activated air defense region is responsible for contacting the Controlling Authority of the region at the Information Center with respect to the operation of this Order.

Information Centers are addressed as "Army Air Forces Information Center" followed by the name of the city. Exact locations and street addresses of Information Centers are considered confidential, shall be so treated by all concerned, and are not to be used in addressing mail.

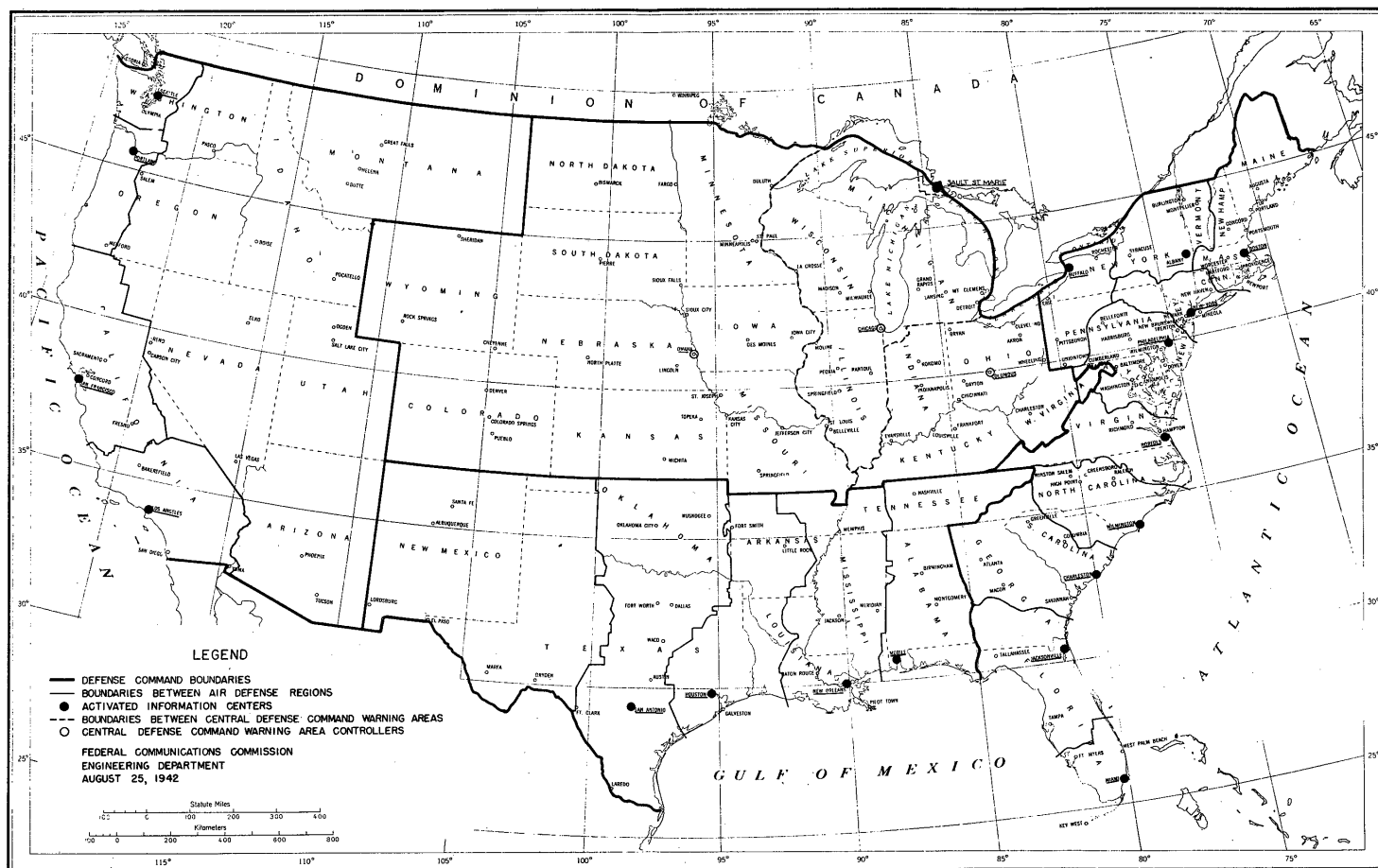
(c) Additional air defense regions will be activated in the near future and boundaries of existing air defense regions are subject to change.

(d) Radio stations located on the border of activated air defense regions and in doubt as to the proper Army Controlling Authority shall request information as follows:

- (1) Stations within the area of the *Eastern Defense Command* shall request information from Commanding General, First Fighter Command, Mitchel Field, Hempstead, New York.
- (2) Stations within the area of the *Western Defense Command* shall request information from Commanding General, Fourth Fighter Command, Oakland, California.
- (3) Stations within the *Southern Defense Command* shall request information from Commanding General, Third Fighter Command, Tampa, Florida. (*The headquarters of the Third Fighter Command is not located within the Southern Defense Command.*)

(e) The Commanding General, Central Defense Command, has designated the Commanding General, Sault Sainte Marie Military District, Fort Brady, Michigan, as Controlling Authority for all radio stations located within the Central Defense Command. The details of organization for the control of radio within the Central Defense Command are currently being worked out under his direction. The plan provides for subdividing the Central Defense Command into warning areas with an area controller for each, who will act as an agent for the Controlling Authority.

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